ISSN 0316-5078

INSTITUTE FOR ECONOMIC RESEARCH

QUEEN'S UNIVERSITY

Kingston, Ontario, Canada K7L 3N6

THE NEW PROTECTIONISM REVISITED*

by

Richard G. Harris
Queen's University

DISCUSSION PAPER NUMBER 758

THE 1989 INNIS LECTURE

CANADIAN ECONOMIC ASSOCIATION MEETINGS
QUEBEC CITY
JUNE 1989

* Preliminary Draft. This research was supported in part by a Killam Research Fellowship and written while the author was visiting the University of Colorado. The hospitality of the Department of Economics at the University of Colorado is appreciated. Any errors in the paper are the sole responsibility of the author.

Abstract

This paper reviews the strategic trade literature in oligopolistic industries beginning with the Brander-Spencer (1984) model of duopolistic international rent-shifting. Issues of long run equilibrium, entry conditions, and empirical estimates of the size of oligopolistic rents in tradeable goods industries are reviewed. In addition the results of simulation models of strategic trade policy are summarized. The final sections of the paper deal with issues of the retaliation by other countries against single country policies and long term policy equilibrium. It is emphasized that the Prisoners' dilemma characterization of these equilibrium may in inappropriate, and managed trade may be a more plausible outcome in oligopolistic industries than strategic trade policies.

JEL Classification Number 421, 422

Keywords: protectionism, strategic trade policy, international oligopoly, policy games

1. Introduction

The 1980's have been rather curious from the perspective of the student of trade policy. In the United States the Reagan years were probably the most protectionist of any post-war administration with the rapid escalation both in the United States and elsewhere of administered protection. At the same time significant trade liberalization occurred on a regional basis, with the Australia-New Zealand free trade arrangement, the Canada-U.S Free Trade Agreement, and the initial steps towards further economic integration of the the European Common Market countries with the goal of eliminating all internal trade barriers by 1992. Historians will have some difficult pinning down the period as one in which the forces of protectionism abated or made great headway. Whatever the verdict on that score it has been an interesting and fertile period for scholars in international trade. Of the many developments that occurred in this period none was more important than the systematic investigation of the implications of imperfect competition both as a cause of trade, and as a source of protectionism. Of the many arguments claiming to either justify or rationalize the 'new protectionism', none has been more important than the claim that: imperfect competition in international trade amongst the major industrial countries is both empirically significant and the existence of these non-competitive industries undermines the traditional case for free trade. My purpose in this paper is to reevaluate this line of research and in particular the form of new protectionism associated with what is known as 'strategic trade policy'. Examples of strategic trade policy are relatively few, but examples often cited include Japanese industrial targeting, U.S. defense procurement, European protection of the Home market in VCR's and autos, and a few examples of subsidizing high technology industries in various countries, including for

example Airebus in Europe.

Strategic trade policy and 'new protectionism' are terms used by journalists in a variety of contexts. I am specifically referring to those uses which pertain to the use of trade policy in the context of market structures characterized by imperfect competition. I therefore will not deal with 'strategic trade policy' motivated either by the existence of externalities or public good problems, including the problems of technology development and transfer, although in practice strategic trade arguments are a mixture of both imperfect competition and externality arguments.

One of the great ironies of the intellectual developments in international trade theory in the early 1980's was the contradictory use to which they were put in the public policy debates in various countries. Within Canada the imperfect competition story was central to arguments as to the merits of free trade as put forward by the Wonnacotts and others. The stories were certainly not new, and had been used in the debate on the formation of the European Common Market. In the presence of imperfect competition trade liberalization enhances national economic welfare because it reduces the market power of protected domestic oligopolies, and forces lower costs through the realization of economies of scale.[1] At the same time the free trade debate in Canada was just starting, Jim Brander and Barbara Spencer wrote a series of papers, published in 1983-84, which laid out the idea underlying Strategic Trade Policy. In this literature the basic premise is that for large countries the presence of imperfect competition provides a rationale for government intervention in favor of domestic firms, and to the disfavor of foreign competing firms. Brander and Spencer made two important points about the role of imperfect competition in their papers. First, with imperfect competition monopoly rents are a source of national income, and

government may wish to pursue policies to shift those rents away from competitors and towards domestic firms in the world industry. Second, the presence of sunk costs in imperfectly competitive industries provides a vehicle via which 'strategic precommitment' by governments and firms in an international market is possible. They were the first to exploit in an international context the now well known idea of Schelling's that actions involving commitments today affect the outcome of future contests involving opponents. It is in the Schelling sense of the term that 'strategic trade policy' is to be usefully distinguished from non-strategic trade policy, although as we shall see much of so-called strategic trade policy is really non-strategic and little different than the old argument for a tariff based on terms-of-trade effects.

For a variety of reasons, undoubtedly the U.S. trade deficit being a principal one, the 'strategic trade' arguments for protection and subsidy fell on sympathetic ears in the United States. The apparent prima facie case for imperfect competition in a number of U.S. industries, and the perception that the Japanese in particular were 'unfair traders' fueled the enthusiasm of the business community for the ideas about trade and protection being put forward by a new generation of economists. It should be emphasized that most of those who contributed to this literature made considerable effort in their written work to point out the problems with the interventionist arguments which emanated from the class of models they were working with, much as previous generations of international economists, among them Harry Johnson, pointed out the prisoner's dilemma nature of tariff protection in a multi-country world with retaliation. In passing it is also somewhat ironic that two of most important contributors to this literature were Jim Brander and Jim Markusen, both economists working in Canadian universities.

An outside observer might well ask how apparently the same class of models can be used as arguments for free trade on the one hand, and protectionism on the other. The basic problem as it turns out is that there are many models of imperfect competition, and answers to particular policy issues are quite sensitive to assumptions as to how markets work, and the manner in which government intervenes in these markets. I hope to explain some of these problems as presented in the literature this evening and also to point out a number of additional problems that the literature has not yet addressed, but which indicate the importance of imperfect competition in the evaluation of trade policy in the large country context.

On a more parochial level it is important for those who live in the smaller open economies to fully appreciate the 'strategic trade policy' argument, both at the logical and empirical level, as it is being used in the large industrial countries. As these arguments are important inputs into the formation of trade policy within the United States, the European Common Market, and Japan it is certain that those policies will impact upon our own country, and in ways that we may not fully understand. In addition to understanding the trade policy process within and between the larger countries, an as yet unresearched topic is the case, if any, for or against small country 'strategic trade policy', or what this might even mean.[2]

The rest of the paper proceeds as follows. Section 2 considers the rent shifting argument and others for strategic trade policy in the context of oligopolistic market structures in which entry possibilities are limited. Section 3 deals with the same questions in the case of the long run-free entry models; specifically how structural factors such as scale economies and product differentiation in large countries should factor into arguments about trade policy. In section 4 the evidence, and relevance of these arguments is

reviewed as are some issues of model sensitivity. Section 5 examines the "policy game" which emerges from these models, and looks critically at the role of government in these models. Section 6 offers some concluding comments on what can be learned from all this for trade policy in high concentration industries, and more speculatively some guesses as to the future prospects for strategic trade policy versus free trade.

2. Entry Barriers and Profit Shifting

The idea presented in the original Brander-Spencer(1984) paper which has undoubtedly attracted the most attention was the observation that in the joint presence of oligopoly and the persistence of pure profits, a motive for predatory action on part of either the national firm or government, is to shift those profits away from foreign competitors and towards the national firm. Brander and Spencer demonstrated in their model that an export subsidy to the Home firm in a world Cournot-duopoly was Home welfare improving. At that time the idea that export subsidies should be welfare improving was counter to most received wisdom garnered from the competitive neoclassical trade model, so this added considerable interest to the subsequent debate. The rent shifting argument is sufficiently simple and elegant that it is worth going over.

Consider a textbook duopoly, both firms selling at constant marginal cost, unthreatened with entry and setting output in a Cournot fashion. With inverse demand curve D(Q), output Q, firm i output q_i, equilibrium requires that marginal revenue equal marginal cost, or

$$(1) \qquad D(Q) + q_i D'(Q) = c.$$

This happy state of affairs is depicted in figure 1, the familiar Cournot duopoly reaction function diagram where R_i indicates firm i 's reaction

function. The situation presented is one where firms are symmetric. Imagine that one firm is located in the Home country, the other firm is located in the Foreign country, and all consumers are in a third country called Consumerland. The free trade equilibrium is indicated by the point FTE. In Marshallian partial equilibrium, or a suitably simplified equilibrium model, Home welfare is measured by the pure profits of firm H. It is worth noting therefore that since profits are what firm H is maximizing, it is also maximizing Home welfare. What then is the case for government intervention?

The Brander-Spencer insight is that the government does not have to take as given what the firm does; in particular it does not have to take the output of the Foreign firm as given, and can calculate how the equilibrium will change in response to its tax or subsidization of the Home firm. What should the government do? If it can costlessly raise revenue via lump sum taxation then by offering the firm a per unit subsidy on output of s it can change equation (1) to:

$$D(Q)+q_H D'(Q) = c-s, \qquad (2)$$

assuming in announcing this policy that firm F continues to behave according to the rule embedded in equation (1). Inclusive of the subsidy the Home firm is now the low cost firm and the equilibrium in Figure 1 shifts to S with Home having a larger share of the market than Foreign, because Home's reaction curve has now shifted to R_H^*. Let us imagine that the Home government manages to choose a subsidy that picks out the Stackleberg equilibrium with Home as leader and Foreign as follower, assuming Home acts with respect to its true cost level c. A little reflection will convince you, I hope, that this subsidy is in fact the optimal export subsidy since it maximizes the profits obtainable by Home firm less the cost of subsidies, assuming the Foreign firm acts as a Cournot follower. Clearly what gives the

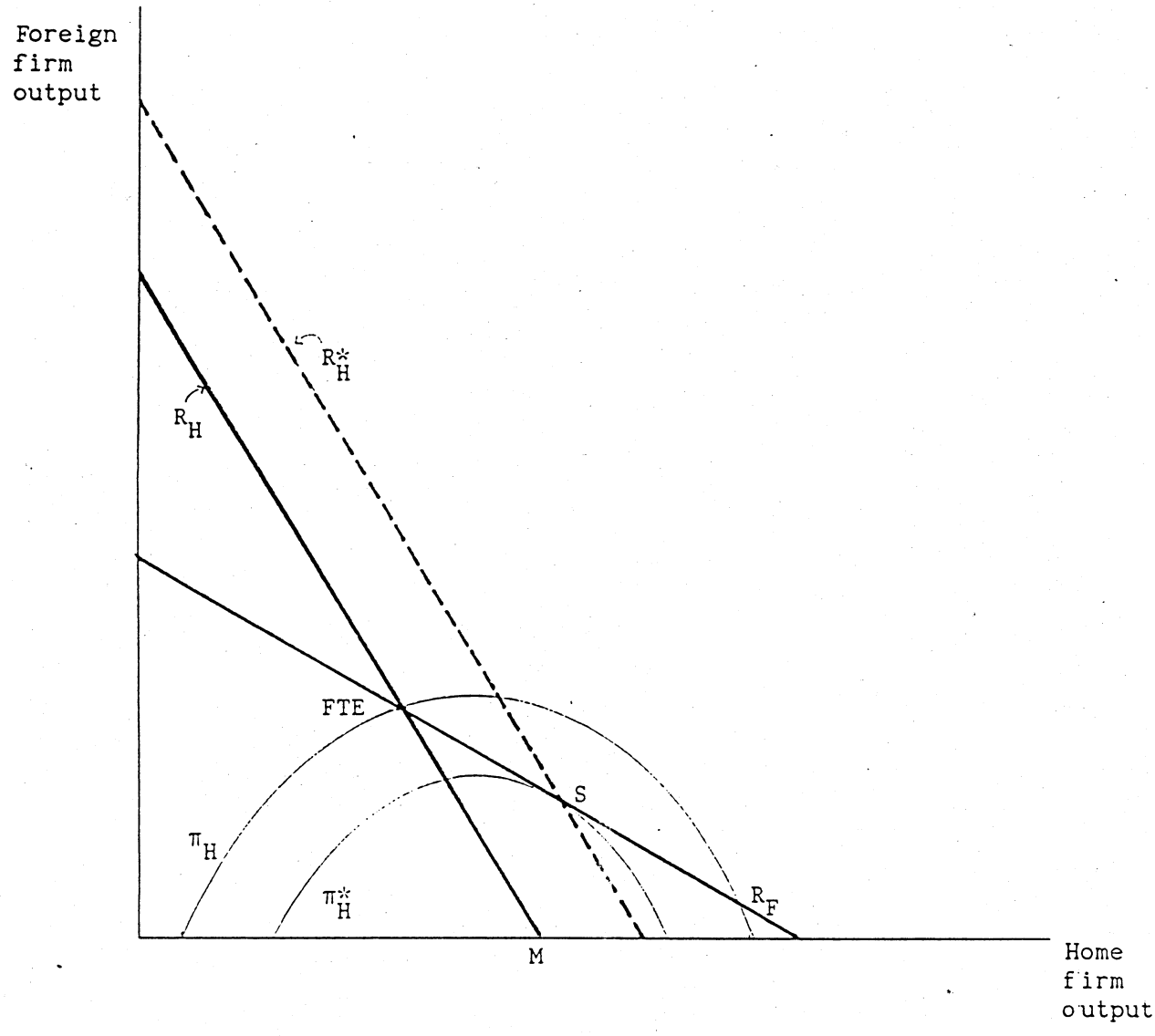

Figure 1

Brander-Spencer Rent Shifting Game
in International Duopoly

Home government leverage in this situation is that it does not take the Foreign firm's output as given, while the Home firm does.

It should be pointed out that the assumptions made on the actions available on governments and firms in this argument are hardly revolutionary. In the traditional optimal tariff argument the Home government rationally calculates supply and demand responses both at home and abroad with the knowledge that all firms and consumers act as price takers, and taking into account that supply must equal demand in all markets. I shall return to the question of what the government can or cannot do credibly in section 5.

The immediate literature generated by the Brander-Spencer model focused on the idea that in the presence of oligopoly if there are rents around, and market structure is oligopolistic, there are a variety of ways in which governments might attempt to shift these rent. The first question might well be--what are the source of these rents? I will return to this issue later, but for the moment let's assume that what is of interest is either a short-run oligopoly model, in which instantaneous costless entry is not feasible, or a long run model with entry barriers sufficiently large to ensure the existence of permanent rents.

One of the Brander-Spencer assumptions which received early scrutiny was their assumption of Cournot quantity competition between the duopolists. After all what is sacred about quantity competition--we know that conjectural variation models can run the gamut from Bertrand to Cournot, and the empirical evidence is not conclusive on which is more appropriate.[3] Eaton and Grossman (1986) demonstrate that the results on the case for export subsidies are sensitive to the nature of competition between firms in the duopoly. To give an example, suppose firms produce imperfect substitutes and are Bertrand price setters. An increase in the price by the Home firm causes

the Foreign firm to raise it's own price moving along the appropriate reaction curve (prices are said to be strategic complements in the language of modern theory). In this model an export tax is optimal because it causes the Home firm to raises its price at any given Foreign price. Once a new equilibrium is re-established after the tax is imposed, both Home and Foreign prices are higher, raising the profits of the Home firm and in this case, the Foreign firm. Note that in this model the export tax is not predatory, since it actually increases the size of the rent 'pie', rather than only increasing the size of the Home firm's piece of the pie. It even turns out than in one case, that of 'consistent conjectures', no intervention is optimal. Clearly then one criticism of the particular export subsidization result is that the details of the optimal policy are dependent upon the nature of the competition between the Home and foreign firms. While the Eaton-Grossman point is correct, it is not a fatal criticism of strategic trade policy. What is considerably more important is the observation that in the presence of oligopoly rents some intervention by government will usually be optimal, provided the government is sufficiently clever to understand the details of industry conduct. In some case intervention involves taxes, in other cases it involves subsidies. It is possible to construct a large number of models around this theme. Krugman (1984) for example explores the idea that by using protection of a Home firm with decreasing costs, marginal costs of sales into export markets can be lowered thus shifting profits towards the Home firm. Dixit (1984) looks at an industrial policy which arbitrarily changes the number of domestic firms competing with the foreign firm. Depending upon relative costs, and the nature of competition it may be desirable to increase or decrease domestic concentration to shift profits towards the Home industry.

This brings me to the next point. Most models in this vein look at some form of non-collusive competition--either price or quantity. However it is well known that oligopolistic market structures may induce either implicit or explicit collusion on price, or non-price variables. It is clear that the Brander-Spencer rent shifting argument in the presence of a collusive, or internationally cartelized industry must be altered. Assuming that Home profits are the only argument in the Home welfare function, then in a fully collusive industry which has secured the monopoly outcome, rents in aggregate can be affected either not at all, or worst, negatively by the intervention of the Home government. The situation is clearly at best one of a zero sum game between firms of different supplying countries. Government can take actions which attempt to shift the share of profits in favor of the Home firm, provided it understands sufficiently well the rule by which the cartel is sharing the profits. One such rule might be that based on the existing distribution of capacity across firms in the industry. In this case the government may encourage the domestic firm to expand capacity beyond what it would otherwise in an attempt to get a larger share of world profits. It would not be too surprising in this type of model to get excess industry capacity.

A slightly different angle on intervention in cartelized-collusive industries is in those instances in which a government could facilitate cartelization when it otherwise might not exist. This type of story is of course familiar to Canadian industrial organization economists. The Eastman-Stykolt (1960) hypothesis was based on the notion that a domestic industry could be effectively cartelized through implicit focal point pricing by the cartel around the world price plus tariff.

What about facilitating collusion of a global industry made of large

country exporting firms? It is not too difficult to find examples of exactly these types of policies where rent shifting is at the heart of the matter. Krishna (1984) and I (Harris (1985)) look at Voluntary Export Restraints imposed on a world oligopoly producing differentiated products. The idea in these papers and the subsequent literature is that given an oligopoly which competes on price, when faced with the existence of the VER imposed on one firm, it necessarily turns the other firm into a price leader. The equilibrium response is to raise industry prices and industry profits. The VER thus serves as an effective means of monopoly price co-ordination or a 'facilitating practice'. In this instance the VER works against the Home firm, and therefore hardly qualifies as 'strategic trade policy'. It raises a basic issue about the motivation of policy in these type industries. The policy may be motivated as much by the desire to foster collusion and thus raise the level of rents in the industry, as it is by the desire to shift rents from the Foreign firm to the Home firm. In many instances it may be impossible to do both, and it may well be that 'rent creation' incentives will dominate rent shifting incentives.

Endogenous entry barriers and potential competition

The underlying assumption in the literature referred to thus far is that entry barriers are sufficient to make rent shifting a realistic possibility. For a short run theory this is adequate but what if one wishes to rationalize these as longer run entry barriers? An important question therefore becomes what are the source of these barriers and are they endogenous as in the modern theory of preemptive entry deterrence begun by Eaton and Lipsey (1979)? Secondly does the existence of potential versus actual competition make much difference to the analysis of strategic trade policy? Surprisingly

this is a question which trade theorists have not done a great deal of work on, in spite of the fact that entry prevention models have a long history in industrial organization.[4]

Perhaps the simplest bare-bones model is the Bain-Sylos-Lambini-Modigliani model of limit pricing by an incumbent monopolist, subject to potential entry by a single competing firm but deterred by scale economies and sunk capacity. Imagine the incumbent to be a high-technology U.S. firm and the potential entrant to be a Japanese firm. There are two ways government can affect outcomes in this situation. One, by affecting the nature of the post-entry game, and two, by altering the conditions of the pre-entry decisions of the incumbent. There are a variety of cases which might emerge in this situation. Dixit and Kyle (1985) shows that almost anything can happen depending upon particular parameter values and the nature of timing in the game.

However some basic themes do emerge. If Foreign entry into the Home market is going to occur in the absence of intervention by the Home government, then there are two ways it might attempt to prevent entry. First any action which lowers profitability in the post entry situation sufficiently to make the entry decision by the Foreign firm unprofitable. A couple of examples of this type of action are protection of the Home market, or offering production subsidies to the Home firm. A host of credibility problems however plague post-entry intervention as we shall note below. Credible post-entry policy 'threats' which succeed in deterring entry, make an unconstrained monopoly price-output combination by the incumbent most likely, and therefore offer the highest payoff to the Home government.

An alternative way to forestall entry is by pre-entry actions by the Home government which have the virtue of usually being credible, although in

many cases costly. In the limit pricing model the government must make credible a larger pre-entry output of the incumbent than the firm would itself find profitable to do so. Subsidization of sunk capacity costs come to mind as one way to achieve this. But the effort on the part of the Home government to prevent entry lowers profits less subsidy costs, and may indeed prove welfare decreasing from a national standpoint, even if successful when compared to the alternative policy of accommodating entry.

Home governments of potential entrants face a different but related set of incentives.[5] The most dramatic case is that in which successful entry will not occur in the absence of intervention even though comparative advantage considerations would indicate entry on the part of the Home firm to the Foreign market to be appropriate. The incentives to subsidize in this case may be quite strong. The cheapest route is through successful 'threat of subsidy' by the Home government which induces the incumbent firm to accommodate entry. More realistic however is a case of actual subsidy to the entrant which results in the entry barrier being overcome. A standard difficult with offering entry subsidies to potential winners is the chance of inadvertently encouraging a lot of losers as well. If incumbents are better informed than governments however about potential competitors' costs it is possible the subsidizing government can exploit this private information. The Home government need only subsidize the least efficient socially profitable Home entrant, since it is possible to rely on deterrent behavior by Foreign incumbents to prevent entry of inefficient-subsidized entrants.

Supply constraints in targeted industries

Trade theorists don't like partial equilibrium, and the early Brander-Spencer conclusion was questioned given its derivation in a partial equilibrium model. One problem raised was the possibility that expansion of the relevant export industry could bid up prices of factors used intensively or specifically in the industry. In the case of a specific factor constraint, due say to specialized labor or capital, attempts to expand the industry may be frustrated by rising supply prices of industry inputs. Grossman and Dixit (1986) look at this issue and conclude that quantitatively the results change, but qualitatively the basic rent shifting incentive remains intact.

General Equilibrium and Multiple Equilibrium

A different sort of general equilibrium problem emerges from the presence of scale economies in these industries. A feature which, in other than the Krugman (1984), has not played an important role in the analysis thus far. In the general equilibrium analysis of scale economies external to the firm, developed by Melvin (1969) and Herberg and Kemp (1969), it was was recognized that while economies of scale created a reason for trade between countries which were completely identical due to the possible gains to international specialization, it was the case that (a) there was a distinct possibility of multiple equilibrium which could be Pareto ranked, and (b) one country could lose from free trade relative to autarky. This analysis can be extended to the case of returns to scale internal to the firm. In the closed economy equilibrium there is one competitive sector an one monopolist, say in the widget industry. In the free trade equilibrium there are two symmetric equilibrium. In one case Country A say has the monopoly in widgets, and the

other Country B, produces only wheat. In the other equilibrium the situation of the two countries is reversed.[6] Each country would prefer to 'win' the monopoly in widgets, and it may even prefer autarky to the free trade allocation, were it the 'loser' in the free trade equilibrium.

While no one has constructed any examples like this in general equilibrium models of oligopoly with increasing returns to scale, I am fairly certain this type of problem is likely to persist in more complex models when comparative advantage differences between countries become small. The implication for policy analysis is that the response of the equilibrium to changes in policy variables may be discontinuous, with the equilibrium jumping from one pattern of specialization to another. Second for a given set of policy variables the equilibrium might not be unique. In either case the presumed stability of the pattern of industrial location underlying most of these partial equilibrium models would be suspect. Needless to say actually doing a full general equilibrium analysis would be daunting task. Furthermore, what is really necessary is a dynamic analysis in which hysteresis may occur due to the importance of initial conditions in determining the long run equilibrium attained.

Summarizing this section the existence of oligopoly rents clearly offers a variety of avenues by which governments are induced to intervene in market outcomes by favoring domestic firms, and disfavoring foreign firms. At the same time the details of any individual policy intervention is sensitive to assumptions about market structure and conduct. Design of policies in these circumstances are information intensive and in some cases general equilibrium evaluations of the policies would prove necessary.

3. Imperfect Competition in the Long Run: Scale economies and product differentiation

In this section the focus is on strategic trade policy in the context of imperfect competition but within a time frame more commonly associated with long run equilibrium of neoclassical theory. In particular the models of interest are those in which the free entry assumption is valid, so pure economic profits are eliminated by competition. The models however are static in nature and therefore pay no particular attention to dynamic factors associated with some of the newer theories of industrial organization involving repeated games.

The series of papers on this subject are motivated by two structural conditions of long run imperfectly competitive markets--scale economies and or product differentiation. In the case of scale economies issues pertaining to firm scale and industry rationalization figure prominently in discussions of policy. In the case of product differentiation the welfare issue of product variety and scale economies are prominent. It should be noted that these type of models were put to other uses before the debate on strategic trade policy or 'new protectionism' emerged in the journals. Krugman and Helpman (1985) summarize the positive theory on scale economies and product differentiation for the purpose of explaining the pattern of trade patterns. It was a model of this sort which I used to look at trade liberalization in Canada in an applied general equilibrium exercise. However, the particular results I will discuss now are in a series of papers by Markusen, Venables and their co-authors, and were motivated not by issues of trade liberalization, but rather by the strong results which appear to come out of the non-free entry oligopoly models.

The papers I shall discuss are all explicitly two-country two-industry

simplified general equilibrium models, although in many cases the general equilibrium aspect of the analysis is not crucial. In all cases however the authors make highly specific assumptions about functional forms on costs or preferences, as was the case in the short run models discussed in the last section. Even with fairly strong, if uncontroversial, assumptions on functional form it turns out that conclusions about tariffs, export taxes and subsidies are extremely sensitive to the nature of the model and other subsidiary conclusions. What is interesting about these models however is not the specificity of their conclusions, but the way in which they highlight non-traditional factors in the analysis of trade policy.

In free entry models with scale economies price equals average cost, not marginal cost. One is therefore immediately in a second best world. From a welfare point of view a major allocative distortion is that price is above marginal cost in the increasing returns industries, and therefore generally the output of these industries is too small relative to the first best. The gains from trade theorems in this literature all emphasize the sufficient condition for gains from trade that the increasing returns industry expand on the opening of trade. With free entry however it is important that rationalization accompany these output increases; specifically firm output must expand resulting in lower industry costs, and not just industry output. A crucial element of policy analysis is how individual firm output is affected and hence industry costs.

A second characteristic of these models emphasized by Venables in a series of papers (1982, 1985, 1987) is whether national markets are segmented or integrated. In an integrated markets low arbitrage costs ensure the law of one price across national boundaries on a given firm's product; in segmented markets a firm can price discriminate between markets. Production

by the Home firm takes place only in the Home country and in the case of product differentiation varieties produced in one country are available in the other country.

A third characteristic of these papers are differing assumptions about underlying comparative advantage. A feature of oligopoly models, unlike the competitive model, is that firms with different underlying costs can be sustained in the same equilibrium. This feature first utilized by Brander and Krugman (1983) gives rise to trade which appears to deny the law of comparative advantage--high cost countries can end up exporting to low cost countries and two-way trade occurs in apparently homogeneous commodities. In such a case protection policy has a clear role to play in reducing high cost imports. Low cost countries can benefit in some cases by protecting their own efficient industry. (One's mind boggles at the idea of domestic producers calling for protection from their high cost foreign competitors).

The demand for brevity preclude me from covering all the results in this literature. Let me mention what appear to be some of the major points made to date.

First, with respect to firm scale. As Horstmann and Markusen (1986) emphasize with economies of scale internal to the firm trade policy can potentially impact on the efficiency of industry production by changing the scale at which individual firms operate. In their model and others two fundamental equilibrium conditions determine firm scale. The first condition is that price equal average cost. Let $D(n,Q)$ denote the perceived inverse demand curve in case of industry output equal to Q, and there are n symmetric firms producing output q so that $Q=nq$. Let $MR(n,Q)$ denote the firm's perceived marginal revenue schedule. Equilibrium involves setting

(3) $D(n,Q)=AC(q)$

(4) $MR(n,Q)=MC(q)$.

The degree of scale economies measured by the ratio of average to marginal cost, $\Phi(q)$, is set equal to the ratio of average to marginal revenue, or letting ε denote the perceived elasticity of demand we get

(5) $\varepsilon/(\varepsilon-1) = \Phi(q)$.

Since policy cannot affect underlying technology in this model changes in the degree of scale economies must be affected by changing the shape of the perceived demand curve of the firm. Figure 2 illustrates a basic free entry equilibrium using the Chamberlain monopolistic competition diagram. Free entry and profit maximization require the perceived demand curve, $d_a d'_a$, be tangent to the average cost curve of the representative firm in both the Home and Foreign country.[7] Policy change results in shifts in the perceived demand curve which either leave unchanged, increase or decrease the firm's equilibrium output level and hence cost of production.

Different models to lead different results and particular choices of functional forms turn out to have strong implications. In Venables (1985) for example a domestic tariff in a segmented markets model leads to an increase in the output per firm of the IRS industry, and consequently lower price. Alternatively in Horstmann and Markusen (1986) a domestic tariff has no effect on the perceived elasticity of the Home firms, but does cause an increase in the elasticity of the foreign firms' perceived demand curve by forcing exit and reducing price. In this case a domestic tariff increase actually causes rationalization *in the foreign firms*, as does a foreign export tax. In the Horstmann-Markusen paper the use of a linear demand curve, together with Cournot quantity competition guarantees that the slope

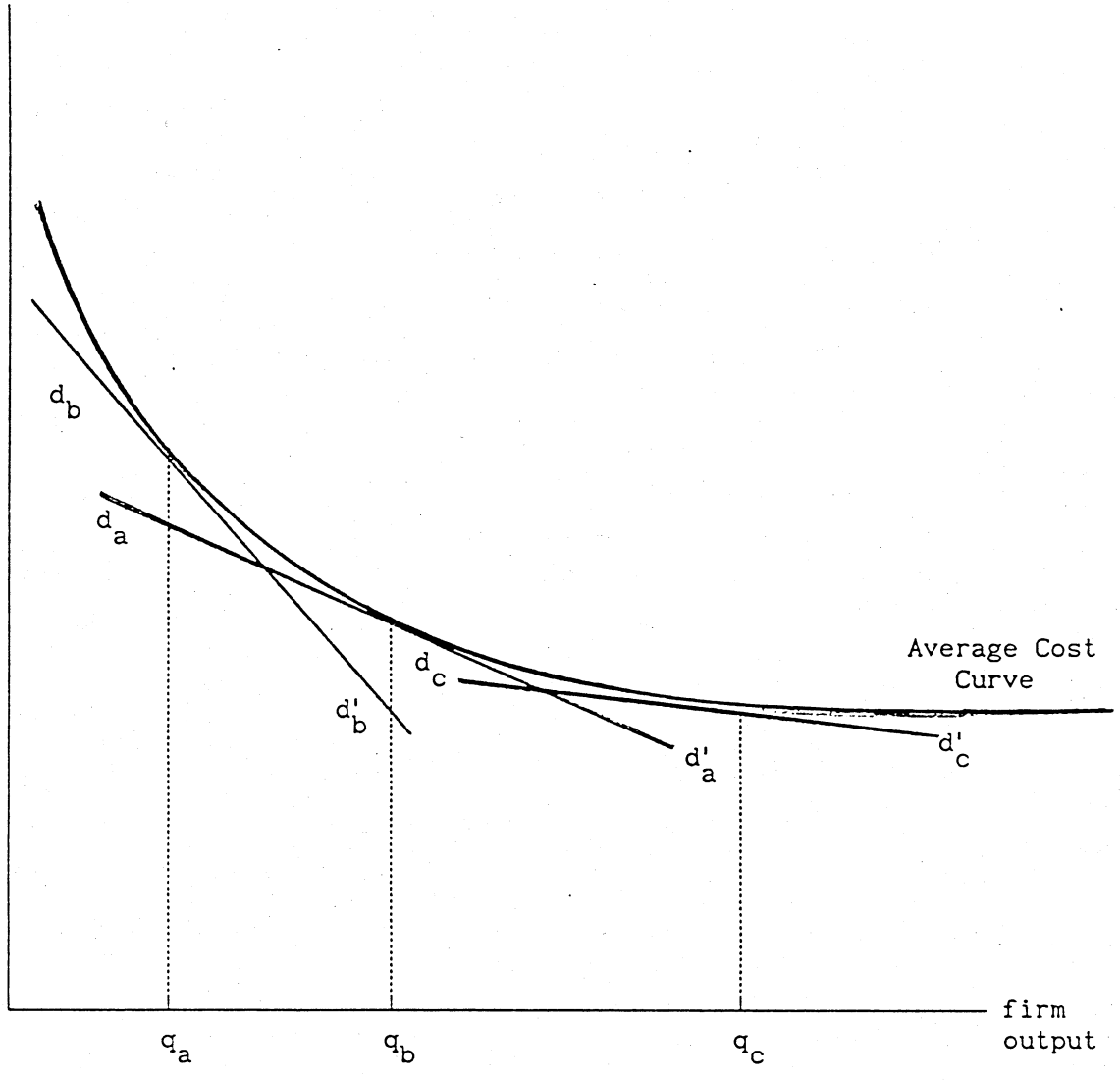

Figure 2

Firm Scale and the Perceived Demand Curve
in Free Entry Equilibrium

of the Home firm's perceived demand curve is a constant and independent of the Home tariff. Protection policy therefore under these assumptions is incapable of having an effect on firm output, and hence industry cost.

It is quite apparent that different models and parameter values lead to different conclusions as to the effect of policy on the state of competition and the perceived of individual firm demand curves. As in the work by David Cox and myself it is possible to use different oligopoly pricing theories, such as Eastman-Stykolt pricing, to ensure that trade policy changes have a more direct impact on industry price.

The second class of results in free entry models pertains to product differentiation. Venables (1987) and Lawrence and Spiller (1983) both look at the Krugman (1979) model of Ricardian intra-industry trade in differentiated products for its implications with regard to trade policy. In all these papers a key assumption is the use of the CES preference structure with variable number of varieties to represent community preferences. These so called Spence-Dixit-Stiglitz type preferences are analytically tractable and have been widely used in a variety of contexts. Venables introduces a slight asymmetry in preferences, in that Home produced varieties are given greater weight than Foreign produced varieties. Consumer welfare obviously depends upon the number of varieties and the price at which they sell. Venables points out that the dual price index function, dual to the sub-utility indicator aggregating consumption of varieties, is a sufficient statistic for consumer welfare in the case of the variable-variety CES utility function. In the case of tariffs Venables shows that a tariff on imports raises Home welfare. The mechanism at work in the Venables model illustrates just how peculiar full equilibrium responses can be in models such as these. The imposition of the tariff reduces the profits of Foreign

firms, causing exit of foreign firms and thus raising profits of Home firms in the Foreign country. This causes entry of additional Home firms, and thus increases the number of Home varieties. As Home consumers value Home produced products more than Foreign produced products, the net effect is to raise Home welfare. In general the results seem to be so specific as to preclude making any form of definite statement as to the directions trade policy ought to take.[8]

An area as yet unexplored, but obviously closely related to product differentiation, is the general problem of non-price competition, as a feature of long run equilibrium. The cleanest results are those in which firm expenditures affect costs, but do not shift consumer preferences. Wasteful (non-informative) advertising expenditures comes to mind. Trade policy can have a powerful influence in these cases by influencing the degree of wasteful expenditures, trading off at the same time the market share effects of changes in the international composition of non-price expenditures.

As a final comment in this section it should be pointed out that policies in this type of long run equilibrium environment are necessarily conceived of as permanent long run policies. We are therefore speaking about permanent protection or permanent subsidy. Most would regard this type of policy as inherently non-strategic as all elements of dynamics are buried. Therefore, in the context of discussing strategic trade policy in high concentration-high entry barrier industries, the usefulness of these models lies in their demonstration that many of the conclusions of the rent-shifting literature must obviously be viewed as particular to market structures with significant entry barriers. This in turn implies that it is of considerable importance in determining conditions of entry into an industry at the

national and international level as a pre-condition for using strategic trade policy analysis.

4. The Models: Are They Relevant?

The burgeoning theoretical literature on strategic trade policy has slowed considerably in terms of the pace at which new ideas are appearing in the journals. The results of the early models were derived in greatly simplified theoretical structures (a plus), but their relevance to the real world remains uncertain (a minus). As mentioned in the introduction the basic message of the strategic trade policy literature, as interpreted by some, was greeted enthusiastically by many in the business community. Many economists however, including authors of many of the papers mentioned, remain skeptical as to where all this leads. In this section I would like to step back and review the case for and against the view of world offered by strategic trade policy.

To many the existence of large scale oligopoly in traded goods industries can be taken at face value. This in and of itself should be sufficient to warrant giving a great deal of attention to market structures which focus on large scale entry barriers, monopoly rents and predatory behavior. Discussions of steel, autos, aircraft (both commercial and military), semi-conductors and computers are often offered as examples of industries in which large-country strategic trade polices are required or exhibited. There are a number of factors which must be addressed before a trade policy analyst can be certain that a strategic trade policy argument is relevant for a particular industry or firm. First, what is it in the structure or conduct of the industry that necessarily makes it a candidate for strategic trade policy? Second, are the rents available sufficient to

justify the possible cost of such policies?

As a preliminary question we might ask to what extent the theoretical models of oligopoly used are appropriate. Industrial organization economists have achieved little consensus on the relevant oligopoly theory. The extent of price competition, the conditions facilitating collusion, and the role of entry and exit barriers all remain controversial. Let me take each of these in turn.

There is some consensus that the Cournot quantity setting model is the right model for prices and outputs in the 'long run' defined as a period sufficient that capacity decisions are endogenous. Beyond that there is little agreement however on pricing behavior. Clearly price wars are common particularly in industries with low marginal cots and high fixed costs. If the Bertrand model is the 'right' short run model then in periods when prices are depressed to short run marginal cost, 'rent shifting' is hardly the relevant story. On the other hand if the Cournot model is the appropriate 'long run' theory of industry conduct, it remains to determine what are the principal reasons giving rise to persistent industry profits.

My own preference is toward those strategic trade policy stories that are relevant when entry and exit of one, or a few, large firms is an important consideration in looking at market structure. Thus the debate about potential versus actual completion is important, and the degree of market contestability becomes essential. The contestable markets doctrine has met with a large number of critics. Many have pointed out that the assumption of no sunk costs and instantaneous entry is hardly relevant to many markets.[9] The strategic trade policy literature has largely ignored the issue of contestability, focusing instead on those situations were sunk costs either implicitly or explicitly must be large, and equilibrium rents

therefore exist. Does this necessarily imply there are no strategic trade policy type implications in contestable industries? Certainly not, but one cannot imagine many of the high concentration industries discussed in the strategic trade context as being contestable. In uncertain environments the value of flexibility makes contestable industries, necessarily characterized by low exit costs somewhat more desirable than they otherwise would be. 'Strategic investment in flexibility' is a theme rarely encountered in this literature but the advent of flexible manufacturing systems may make the discussion more relevant at some future date.

Where are the rents?

The strategic trade policy debate focuses on the possibility of increasing national welfare (or not letting it decrease) by either capturing or defending market share, which in turn confers the benefit of receiving a share of the 'rents'. The rents in the models are usually thought of as monopoly rents. However, estimated monopoly rents are surprisingly small at the aggregate level, and call into question the motivation for the policies in the first place. Cowling and Mueller (1978) for example estimate that monopoly rents in aggregate U.S. manufacturing are probably between 3 and 4 percent of manufacturing value added. Assuming these results are representative of other countries, the net gain to shifting monopoly rents towards the Home country in any particular industry could be very small, assuming of course such a policy is feasible.

It is possible however the relevant rents are not monopoly rents, but rents to labor in the relevant sector, reflecting market power on the part of labor or a host of labor market barriers to entry.[10] Recently Katz and Summers (1988) have argued that inter-industry wage differential are both

large, systematically correlated within industries across countries, and often concentrated in the tradeable goods industries. Katz and Summers find the industry differentials to vary from a high of 29 percent above the mean in petroleum to a low 34 percent below the mean in household services. Durable goods, manufacturing and mining all pay wages above those workers in service industries, ceteris paribus. After dismissing the compensating differentials explanation they they argue that the efficiency wage theories offer one plausible explanation for these wage differentials. If this is the case then by moving workers from low wage industries to high wage industries via strategic trade policy national welfare is improved.

Is this really the same brand of strategic trade policy that we have been discussing thus far? I would argue no--the argument is much closer to the case for Keynesian stimulus in the case of unemployed labor. In this instance an empirical case is made that the high wages are found in manufacturing tradeables industries, and therefore policies to promote employment in those industries is what is called for. At the world level, though these differentials tend to be similar by industry across countries, so what is called for is reallocation of resources in all countries to the high wage industries, not just in one country. If the argument for 'strategic trade policy' based on interindustry wage differentials is to be convincing some justification for why high wages tend to be found in exportable industries and not in others (importables or services) seems required. As yet no plausible reason has been offered based on efficiency wage theory.

A different and much older argument focusing on wages relates specifically to the possibility that the labor market is imperfect. It has long been recognized in the traditional factor distortions literature that if

monopoly power exists in the labor market of a particular sector it can be welfare improving to increase employment in that sector. If one assumes that *both* the labor market and the product markets are imperfectly competitive with substantial entry barriers to both labor and new firm entry then the strategic trade policy story becomes more plausible. Surplus sharing by the workers and firm result in firm profits significantly understating the true extent of rents existing.

Partial Equilibrium Simulation Studies

An alternative way to judge the potential relevance of the theory of strategic trade policy is to examine a particular industry and using what empirical information is available evaluate the effect of alternative policies. Similar in spirit to applied general equilibrium analysis there have been a number of partial equilibrium industry models built which have looked at strategic trade policy including Baldwin and Krugman (1988a,1988b), Dixit (1988), Venables and Smith (1988) and Rodrik (1988).

Baldwin and Krugman (1988b) model the Airebus-Boeing competition in the market for wide-bodied commercial aircraft. In particular they look at the effects of the European subsidies to Airebus in a duopoly model with dynamic learning curve effects which are internal to the firm. Their simulations show that a subsidy to Airebus of approximately 1.47 billion dollars (in present value terms) leads both to entry of Airebus and improvement of European welfare of 1.43 billion dollars. Without subsidy they conclude that Airebus would not have entered and that prices would be on average about 40 percent higher with a Boeing monopoly. Thus the principal effect of the subsidy policy is redistributive, benefiting consumers, and costing European taxpayers and Boeing equity owners. The net welfare effects of the policy

are extremely small.

Dixit (1988) is a simulation study of the auto industry using a Japanese-U.S. duopoly model for the years 1979-1980. Dixit examines unilateral U.S. tariff and subsidy policy. The model is static, there are no sunk costs nor scale economies, although rent-shifting is an issue. Dixit assumes that marginal costs are constant in both firms, thus reducing the welfare issues to monopoly allocative distortions and rent shifting. His results are surprisingly mild. The optimal tariff in his best-case simulation is only about 16% in the absence of a producer subsidy, and 12% when used in connection with an optimal subsidy. The results are bit more dramatic when it is assumed existing wage bills in the U.S. auto industry are about one-half monopoly rent. The welfare gain in the latter case prove to be about 70 percent higher than assuming no labor rents, although in both cases the welfare gains were not sizable. Dixit also notes his conclusions were quite sensitive to assumptions about the marginal deadweight cost of government finance, thus calling into question the commonly used assumption of non-distortionary revenue raising used in the theoretical literature.

In conclusion the simulation studies suggest a couple of things. First the emphasis on net welfare in many papers is probably misplaced, relative to the distributional consequences of these policies. The welfare effects of strategic subsidy and tariff policies seem to be small in models with limited entry . However the redistributive effects can be large. Thus rent shifting polices appear to be partially effective and can have substantial effects on the net welfare of particular groups. Trade policy in imperfectly competitive industries with substantial entry barriers can therefore have important effects on the individual welfare of individual producer and consumer groups, and this has important consequences for the political

economy aspects of protection. The simulations suggest national incentives for the large countries to implement 'strategic' policies can be large, particularly to the extent that welfare functions weight specific factor income of the targeted industry more heavily than consumer or taxpayer welfare.[11]

5. Policy Games

We have yet had little to say about government. Indeed one can legitimately ask what is particularly 'strategic' about the types of government policies we have been discussing thus far. After all the protection and subsidy issue sounds from the government point of view much like the traditional trade theoretic issues of tariffs and subsidies. In the traditional instruments-target approach the government chooses its instruments (tariffs, quota's etc.) anticipating how economic agents will react to changes in these instruments. The criticism is valid and much of 'strategic trade policy' is really only different because economists re-discovered the rhetoric of game theory in the early 1980's. The new problems dealt with in this literature arise because the agents the government is assumed to be dealing with behave 'strategically'. This is obviously true of other governments, but it is also true of the firms in these markets--particularly in the rent-shifting games with large entry barriers.

For the purposes of this section let me assume that governments are interested only in net national welfare defined as the sum of consumer plus producer surplus less any deadweight losses from revenue raising activities. Distributional considerations are ignored. I wish to consider two classes of games. Government-firm games and Government-Government games.

Government-Firm Games

In much of the literature the government is presumed to play a game against one or more firms, with the government endowed with a first-mover (Stackleberg) advantage in setting its instruments. This is clearly the traditional model motivated by some belief that the government has credibility in announcing policies which will be subsequently carried out. It is useful in the context of games where the firms are large to examine other possibilities. For example can government legitimately claim to have a first-mover advantage in these circumstances, and if not what then?

Consider the Brander-Spencer export subsidy game assuming the dominant player, the Home government, has a legitimate first-move and can pre-announce its export subsidy policy. Firms then proceed to build plants of appropriate size and the predicted market outcome is observed. Once export sales commence the government is supposed to pay a subsidy on each foreign sale; however the government has no clear incentive at this point to pay such subsidies, and indeed if there are any deadweight costs to raising government revenue it has incentives to not pay the subsidies. This is yet another example of a dynamic inconsistency in dominant player games familiar from the monopoly literature. How can one resolve this problem? If sales must precede output and investment decisions, as is the case in some durable goods industries with long production lags then the subsidy policy may be credible in a legal-contractual sense; the government commits itself to the subsidy at the time orders are received. In many markets this avenue for achieving credibility may not be feasible. Suppose one were to impose sub-game perfection on admissible equilibrium strategies thus eliminating incredible threats. Assuming some deadweight costs to revenue raising the only credible

equilibrium is the no-intervention equilibrium in the simple rent shifting model sketched above.[12]

What makes oligopolistic markets interesting is that there are a number of ways which this problem can be realistically circumvented. Let me discuss each in turn.

Reputation

As we are now well aware, in a world of imperfect information it is possible the government can build a reputation for carrying out its stated policy intentions in a repeated game context, following the famous Selten chain store game. In this context one has to imagine the government facing over time a sequence of industries in which it threatens intervention, and intervening a sufficient number of times to build credibility with potential future opponents in international industrial conflicts. The major problem, as I see it, for the relevance of this argument is the number of times the government must play 'tough' to realistically secure such a reputation. It strikes me that the number of industries, even for large countries, in which strategic trade policy arguments are relevant are few. Consequently the opportunity for building reputation in this manner is likely to take a long time and to be costly. Perhaps however this is precisely what the infamous Japanese industry ministry, MITI, did in its heyday during the 1960's and 70's.

Rule Bound Institutions

A second way of delivering on credibility is to commit the execution of trade policy to rule-bound institutions, not subject to short term legislative or executive interference. Bureaucracies committed to particular rules of intervention, based on certain criteria or 'per se' doctrine carry

with them a certain degree of credibility. The 'Super 301' section of the omnibus trade bill in the United States which mandates retaliation by the USTR against 'unfair traders' is clearly an example of this type of commitment. Rules are not without cost however, the most obvious one being retaliation. Leaving that aside for the moment, it strikes me as difficult to derive rules which will result in the execution of policy in the 'right' industries. The simple problem of ascertaining when rents are present to be shifted will undoubtedly prove extremely difficult to embody in some appropriate manual for strategic intervention.

Sunk Costs in Targeted Industries

The simplest and most credible way of intervening in these type of industries is for the government to target its policies at those features of the industry which give rise to the oligopolistic nature of the industry in the first place--large sunk costs. Governments by reducing the private costs of commitment on the part of Home firms, can credibly affect future market outcomes.[13] Straight subsidization of sunk costs is the simplest way this can be achieved, although protection of the home market in the early stages of the product cycle are clearly also a policy which falls in the same category.

An important question about the government-firm policy games pertains to the government's presumed first-mover advantage. It is not at all clear that in most instances this is the case. One can certainly imagine situations such that the government has no particular strategic advantage, and indeed private firms may make the first move anticipating government policy. What happens in these instances? In the pure rent shifting game, with all firms and the government moving simultaneously the government has no particular role to play. The Home firm can do as well without Home government

intervention as with it. If the Foreign firm moves first the interest focuses on those cases in which *second moves* by the Home government can credibly shift rents between the Home and foreign firms, and thus affect the first-move by the Foreign firm. An example might be protection of the Home market by the Home government in the event that Foreign attempts to monopolize the world market. This possibly credible threat by the Home government may deter monopolization by Foreign and allow a greater world market share to the Home firm--that is 'Free Trade' is the actual outcome, although the rhetoric and intended threats in the policy are protectionist.

The heavy emphasis in the literature on the government as a dominant player in these instances seems to me unjustified. Clearly further research on alternative timing assumptions is warranted.

Government-Government Games

The discussion thus far has been like Hamlet without the Prince--what about retaliation by other governments? The conventional answer is hardly surprising, especially in those games with rent shifting as the dominant motive. As numerous authors have pointed out beginning with Brander and Spencer (1984), much like tariff retaliation analyzed by Johnson (1953/54) the Nash non-cooperative outcome of two countries both pursuing 'strategic trade policies' in pursuit of market share may result in the Prisoner's Dilemma game structure with both countries vastly worse off than in the case of no-intervention. (The good news of course is that consumers who aren't taxed for these games are much better off.) The static Pareto superior outcome is free trade. This theoretical result is invariably demonstrated in the context of a two-country symmetric model. While this result has been demonstrated in some theoretical models it also turns out that in some

empirical exercises with multiple countries that the non-cooperative interventionist outcome is preferred to the free trade outcome for some countries. The Venables-Smith (1988) model of the world auto industry has one case in which European protection of the Home market, given an equilibrium pattern of retaliation by the U.S. and Japan is preferred by Europe to the free trade outcome. It is clear therefore that circumstances can arise in which the 'Prisoners' Dilemma' paradigm of these games is not relevant, and non-cooperative industrial targeting may indeed make some countries better off, while obviously harming others. This is clearly a major topic for future research, both theoretical and empirical. One can easily imagine how an extreme asymmetry such as a large-small country distinction could lead to such a result, but why in competitions among similar sized large industrial countries?[14]

One potential source of asymmetry between countries relates to what might be termed differences in *strategic advantage*. Consider the simple duopoly model involving two countries and two firms, each country subsidizing its own firm with the objective of maximizing its rents. The Nash equilibrium of such a game characterizes the resulting policy equilibrium. Let s_i denote the market share of each country, $i = H,F$; mc_i marginal production cost, and P market price. In the non-interventionist free trade equilibrium the ratio of market shares is characterized by

$$(6) \quad s_H/s_F = \frac{P - mc_H}{P - mc_F} .$$

The country with the lowest marginal cost has the highest world market share in equilibrium reflecting comparative advantage differences between countries. Let λ_i denote the slope of country i's reaction curve depicted in figure 1. For example

$$(7) \quad \lambda_H = \partial q_H / \partial q_F \ .$$

With this notation it is possible to characterize the equilibrium when both governments attempt to preempt market share through competitive subsidization. The equilibrium ratio of market shares in this situation is given by

$$(8) \quad s_H/s_F = \frac{P - mc_H}{P - mc_F} \cdot \frac{(1 + \lambda_H)}{(1 + \lambda_F)} \ .$$

In this case the ratio of market shares is the product of what might be called the comparative advantage coefficient, and the strategic advantage coefficient reflecting the ratio of one plus the slopes of the respective firms' reaction coefficients. For example the Home country would have a 'strategic advantage' if increases in the Home firm output caused relatively large decreases in Foreign firm output, and conversely Home output was insensitive to Foreign output increases. Relative strategic advantage might occur for a variety of reasons including differences in factor prices, technology, country size, and the extent to which labor costs are contractually sunk or not. A country with relative strategic advantage will secure a larger equilibrium market share even in the absence of comparative advantage differences between countries.

Summarizing it is possible that an asymmetric outcome of the two country policy game will occur when either strategic or comparative advantage differences exist between countries. Furthermore it is possible that this outcome will be preferred by the favored country relative to the non-interventionist outcome. An important open question is just how empirically relevant this type of non-symmetric equilibrium to the non-cooperative policy game might be. Obviously traditional arguments in favor of free trade and against industrial policy commonly put forward on the

assumed characteristics of retaliatory equilibrium relative to non-interventionist equilibrium would have to be re-examined were this argument to be taken seriously.

The intellectual underpinnings for the post-war multilateral tariff reductions under GATT as a rational equilibrium outcome emerges from the theory of repeated Prisoners' Dilemma games. It is well known that with a sufficiently low discount rate 'tit-for-tat' type strategies, or 'trigger strategies' will sustain the Pareto superior cooperative outcome as a non-cooperative Nash equilibrium. Dixit (1987) has applied this idea to trade wars, and shown how free trade emerges a a result of the threat by countries to protect in the event other countries protect. Most of these analyses however are done in models in which intertemporal linkages, other than through the intertemporally additive objective functions of players, are non-existent. Introducing real capital for example makes the analysis horrendously complicated. It is however extremely important.

A basic question is whether for industries in which strategic trade policy is thought to be important, that is industries with large sunk costs in the form of physical or human capital, admitting intertemporal considerations of retaliation is more or less likely to foster cooperation or policy coordination? A useful model to look at these issues embodies industrial subsidy and protection over a typical product life cycle. The early phase of the cycle, which we can think of as the investment phase, sunk costs are incurred. In this phase little in the way of international sales occur. In the second phase marketing and sales, both at home and abroad occur. The second phase can be thought of as lasting quite a long while. In the industries of interest the production phase is associated with large fixed costs and low marginal costs of production. Capacity constraints may

be realistic making supply highly inelastic when demand is high.

A recent paper by Bagwell and Staiger (1989) in an extension of the repeated games approach to trade wars, points out that the benefits to cheating on the free trade outcome are proportional to trade volumes. With high rates of discount it is quite possible the free trade outcome cannot be sustained as an equilibrium because the short term benefits to cheating may be too large starting from a free trade allocation. They go on to argue that something short of free trade, but less protective than the non-cooperative static tariff ridden equilibrium, may be sustainable. By putting some degree of protection on the industries in both countries in all periods, the status quo is characterized by reduced trade volumes; this in turn reduces the incentives to cheat on the 'managed trade' outcome with limited protection as they call it.

The Bagwell-Staiger idea seems highly relevant to the case at hand. Once sunk costs are sunk in, there is a strong incentive for countries to impose protection, in any period in which total world demand is insufficient to absorb all available supply. With elastic short run marginal cost curves, protection of the Home market can dramatically shift the share of imports in the Home market, and thus shift quasi -rents to home producers. Short-term trade wars are therefore likely in these type of industries. Rational anticipation of these trade wars means that 'free trade' may be a very difficult outcome to sustain by threat of retaliation. However something less than free trade might well be sustainable along the Bagwell-Staiger lines. Tariffs or quotas which reduce the trade volumes from the free trade levels provide a benchmark which may be significantly less protectionist than an outright trade war, but sustainable by threat of future retaliation were any country to raise its level of protection even further.

Now add to the above story the possibility of 'strategic industrial policy' in which countries choose the level of subsidy to offer firms on their sunk costs in the investment phase of the product cycle. As in the government-firm games, non-cooperative governments contemplate capturing future market share by lowering private costs of commitment to the Home firm. Obviously if governments were to anticipate no future protection then the non-cooperative incentives would lead to the type of inefficient outcomes referred to previously. Alternatively, were governments to rationally anticipate some level of protection in each other's markets, or a 'managed trade equilibrium', then the incentives to subsidize the strategic industry would be greatly reduced during the investment period. Indeed one can imagine that the full equilibrium outcome involves some level of protection ex post, but with no intervention in the investment phase--thus eliminating apparent 'strategic trade policy' as an observed policy equilibrium.

This of course is not the only admissible outcome. It is conceivable governments might induce the free trade outcome in the production sales/phase of the game given sufficiently low discount rates for example. However were this to occur incentives to capture market share through preemptive industrial policy in the investment phase would be strengthened. If it were possible to link trade and industrial policies both across sectors, and across time it might be possible to structure punishment strategies such as to sustain the non-intervention outcome. It would involve for example making threats of the form "if you subsidize in the A sector today then I will subsidize in the B sector tomorrow." How such statements could be credible however have yet to be carefully elucidated in any model I am aware of.

In summary the case for cooperative non-interventionist outcomes in industries characterized by large sunk costs and increasing returns are are

not impossible, but less probable than in competitive industries. First, it is possible that the non-cooperative interventionist equilibrium actually makes some countries better off than in the non-intervention outcome, undermining the basis for cooperation. Second, attempting to use the long run nature of the policy game being played between countries as a way of creating credible threats to sustain cooperation is plagued by the significant benefits available to any country which successfully protects a large sunk cost industry once those costs have been sunk.

6. Conclusion

What can be learned from all this? First, there is no doubt that the analysis of trade policy in imperfectly competitive industries was a source of rich theoretical analysis, and a number of important new insights. It would seem however that as far as the theory goes we suffer from the usual embarrassment of riches that oligopoly theory offers. It is not just that we have many alternative theories to choose from in looking at a given problem, but even a single model can lead to quite different conclusions depending upon parameter values. While we can justifiably claim our theoretical reasoning is much more rigorous than it once was, using a priori reasoning to come to policy conclusions is fraught with difficulty. I think this is one substantive difference between the analysis of protection under perfect competition and imperfect competition. The problems are particularly acute in the analysis of the short run, or of market structures where entry barriers lead to very small numbers competition.

Secondly, the emphasis on non-collusive equilibrium among firms, and non-cooperative static policy equilibrium among governments should only be viewed as the first steps in the research program. Dealing with both

collusion among firms, and the dynamic nature of the policy game played between and among firms and governments should add realistically to our perspective on the role for strategic trade policy.

A number of commentators on trade policy have stated that the 'strategic trade policy' essentially makes old arguments for free trade either incorrect or irrelevant. I believe this statement is only partially correct and seriously misleading. There is still a great deal of trade which is motivated by factor endowment differences, and because some markets are imperfect this does not necessarily mean the lessons from neoclassical general equilibrium theory are invalid--they obviously deserve some qualification since the theory of the second best must be kept in mind.

In the public debate on free trade and strategic trade policy two quite different notions are often confused. One is the concept of 'strategic trade policy' as discussed in this paper, and the other is what is commonly termed 'managed trade'. There is no doubt we have had a lot of managed trade in the last decade--quotas, the MFA, voluntary export restraints, orderly marketing arrangements, trigger price mechanisms, etc. These type of politically negotiated, market sharing arrangements have been observed across all types of market structures and not just those thought to be 'relevant' for strategic trade policy. Managed trade is often motivated by considerations of stability and equity in international relations. Managed trade arrangements often come closer to notions of 'reciprocity' and are inherently cooperative in nature. Managed trade when successful often has the side effect of fostering international collusion among sellers to the detriment of consumers everywhere.

Strategic trade policy on the other hand is usually aggressive and predatory in nature. It is focused on market share capture, rather than

market sharing. It tends to be mercantilist in nature in that it is usually focused on export markets, and it is not concerned with fostering cooperation among different national firms. Examples of strategic trade policy are few when compared to managed trade; some use European industrial policy, and the Japanese protection of the Home market as possible examples of strategic trade policy. Others use U.S. defense procurement as an example of strategic trade policy. It is interesting that in most cases the country so accused denies it is being 'strategic'.

Simplifying one can classify trade policies to deal with the high concentration strategic industries into three stylized categories--free trade, strategic trade policy, and managed trade. It remains to see which of these alternative approaches to trade policy in these industries might emerge as most prevalent, or in fact whether we might observe a combination of policies over time and over particular industries.

Let me offer however some speculation on where we are likely to go, and what economists have to offer the debate. First, I think that in the choice between managed trade and strategic trade, managed trade will win out in the political process most of the time. There are a number of reasons. First, overt strategic trade policy practiced by one or more of the major industrial countries, will almost surely lead to retaliation in the form of protection of the Home market. These type of trade wars can be foreseen, are clearly politically and economically costly,and trade policy makers will seek to avoid them. Second, in periods of high government deficits costly strategic trade policies involving subsidy are bound to meet resistance from legislators. Managed trade however both avoids conflict, tends to perpetuate the status quo, and spreads the resource cost of the policy widely across consumers in the form of higher prices, rather than higher taxes.

What of free trade? It is interesting that in the formal literature there is relatively little analysis of bilateral or multilateral reduced protectionism in the case of the so-called 'strategic industries'[15]. Additional research is necessary. Economists' natural focus on efficiency concerns has led in this particular instance to insufficient attention to the question of the international distribution of gains and losses from market allocations. The public interest case for free trade founders on the objection that in the absence of strong comparative advantage differences between countries, the actual pattern of a free market allocation of high concentration industries could be detrimental to one or more countries. As yet free trade arguments have seemed to carry little weight in actual policy dealing with these industries--in almost every industry either protection, subsidy, or managed trade have been observed to some degree in the large countries.

The smaller countries have considerable interest in the outcome of the competition between these alternative policy approaches; first as consumers of many of these goods, second as suppliers of components and materials which serve as crucial inputs to these industries; and third, as participants in the global trading system which will inevitably be shaped by the resolution of policies dealing with the high concentration industries. Trade wars between the larger countries could have serious consequences for the smaller countries, as we are well aware given what has happened in world grain markets to give one example. In the case of managed trade terms of trade losses induced by the collusive exercise of monopoly power by large country cartels, might not be so dramatic but can be equally costly.

Free trade may not be dead yet, but the patient is failing quickly and the economics profession has its share of work to do to if the illness is not

to prove fatal. We must either put the case for free trade amongst the large countries on firmer empirical ground, or alternatively provide guidelines for industrial policy cooperation and the administration of international trade in the strategic industries which avoid the worst outcomes of the 'new protectionism'.

Footnotes

1. There is now a vast theoretical and empirical literature pertaining to trade liberalization and imperfect competition, much of it recently coming out of Europe and the development economics literature. While related to some of the issues of this lecture to survey this literature is the subject of yet another paper.
2. Some aspects of the small country problem in a world dominated by large country strategic trade policy are explored in Harris (1985b).
3. Gollop and Roberts (1979) provide some evidence on conjectural variations in U.S. manufacturing.
4. Brander and Spencer were clearly aware of the problem. In Spencer and Brander (1983) they considered a duopoly R&D race in which sunk R&D costs constituted a form of entry barrier. However the model was one of actual duopolistic competition and not the impact of potential competition on an existing oligopoly.
5. This section is based Harris (1988).
6. It is also conceivable there is a third equilibrium with both countries having a widget firm. Such an equilibrium cannot exist if the duopolistic competition involves Bertrand price competition among the two firms.
7. For simplicity only one country's representative firm is illustrated in figure 2. A stepper perceived demand curve has a lower elasticity, lower output and higher cost than the flatter, high elasticity, demand curves give rise to.
8. An interesting, but equally specific, model of vertical (or quality) product differentiation and trade is undertaken by Shaked and Sutton

(1983).

9. See Shepherd (1986) for a criticism of contestability theory on empirical grounds. There is just beginning some empirical literature on direct tests of strategic entry deterrence. See Smiley (1988).

10. This case was discussed in Harris (1985), chap.6 and by Dixit (1988) in his discussion of trade policy in the automobile industry. A number of recent studies suggest that unions engage in rent sharing in concentrated industries, and reduce measured price-cost margins. See for example Domowitz, Hubbard and Petersen (1988) and Freeman (1983).

11. A number of the simulation studies bear on the question of free entry versus fixed number of firms. In my OEC study [Harris (1985)] some of the industrial policy simulations looked at what happened by fixing the number of firms versus allowing free entry. With scale economies the results differed quite a bit. Rodrik (1988) in a partial equilibrium model of selected manufacturing industries in Turkey deals explicitly with the 'integer issue'—that is adjusting the model so that only an integer number of firms are allowed in the industry. He finds that the results with free entry on trade liberalization are uniformly welfare improving, that with a fixed number of firms results in some cases were reversed relative to the free entry case, and often not much different than the competitive results, and third, the integer constraint on the number of firms in looking at entry and exit was actually important, contrary to what most of the theoretical literature assumes.

12. What if the optimal policy is an export tax as in the Eaton-Grossman model? The model now becomes sensitive to the interpretation of whether both prices and quantities are really ex post adjustable. If they are then the game is simultaneous and the credibility issue disappears, but

the government loses its first mover advantage and hence any reason for intervention. However if the interpretation of the game as one in which price objectives are set, and then output decisions consistent with these objectives are implemented the ex post problem of credible government intervention may disappear, as export taxes may be a non-distortionary way of raising revenue and hence desirable ex post.

13. This point was clearly recognized in the Spencer and Brander(1983) model of international R&D rivalry.

14. One idea is related to the multiple equilibrium example referred to in the discussion of general equilibrium. If some slight asymmetry leads to one country always losing the IRS industry in the free trade equilibrium, then one can imagine that in a non-cooperative trade/industrial policy war, it would still be better off than in free trade if subsidy or protection ensured it retained some share of the IRS industry.

15. There are a number of papers dealing with the small country case and some of these may be relevant for the larger countries. Ross (1988) is one recent example.

Bibliography

Bagwell,K. and R.W. Staiger (1988) "A Theory of Managed Trade", working paper, Hoover Institution, Stanford University.

Baldwin, R. and P Krugman (1988) "Market Access and International Competition: a Simulation Study" in R Feenstra (ed.) *Empirical Methods in International Trade* (MIT Press, Cambridge, Mass.).

Baldwin, R. and P. Krugman (1988b) "Industrial Policy and International Competition in Wide-Bodied Jet Aircraft", in R.E. Baldwin (ed.) *Trade Policy Issues and Empirical Analysis* (National Bureau of Economic Research, University of Chicago Press, Chicago).

Brander, A.J. and Spencer, B.J. (1984) "Trade Warfare, Tariffs and Cartels", *Journal of International Economics*, 16, 227-42.

Brander, A.J. and Spencer, B.J.(1985) "Export Subsidies and International Market Share Rivalry", *Journal of International Economics*, 18, 83-100.

Brander, A.J. and P. Krugman (1983) "A Reciprocal Dumping Model of International Trade", *Journal of International Economics*, 15, 313-321.

Cowling, K and D.C. Mueller (1978) "The Social Cost of Monopoly Power", *Economic Journal*, 88, 724-48.

Curtis, D.C.A. (1983) "Trade Policy to Promote Entry with Scale Economies, Product Variety and Export Potential", *Canadian Journal of Economics*, 16, 109-121.

Domowitz, I., R. G. Hubbard and B.C. Petersen (1988) "Market Structure and Cyclical Fluctuations in U.S. Manufacturing", *Review of Economics and Statistics*, 70, 55-66.

Dixit, A.K. (1984) "International Trade Policy for Oligopolistic Industries", *Economic Journal*, Supplement, 94, 1-16.

Dixit, A.K. and G. Grossman (1986) "Targeted Export Promotion with Several Oligopolistic Industries", *Journal of International Economics*, 21, 233-250.

Dixit, A.K. and A.S. Kyle (1985) "On the Use of Trade Restrictions for Entry Promotion and Deterrence", *American Economic Review*, 75, 139-152.

Dixit, A.K (1987) "Strategic Aspects of Trade Policy" in T.F. Bewley (ed.) *Advances in Economic Theory: Fifth World Congress* (Cambridge University Press, New York).

Dixit, A.K. (1988) "Optimal Trade and Industrial Policies for the U.S Automobile Industry" in R. Feenstra (ed.) *Empirical Methods for International Trade* (MIT Press, Cambridge, Mass.).

Eaton,C. and R.G. Lipsey (1979) "The Theory of Market Preemption: The Persistence of Excess Capacity and Monopoly in Growing Spatial Markets", *Economica*, 47, 149-158.

Eaton, J. and G. Grossman (1986) "Optimal Trade and Industrial Policy under Oligopoly", *Quarterly Journal of Economics*, 101, 383-406.

Freeman, R. (1983) "Unionism, Price-Cost Margins, and the Return to Capital", Working paper No. 1164, National Bureau of Economic Research.

Gollop, R. and M. Roberts (1979) "Firm Interdependence in Oligopolistic Markets", *Journal of Econometrics*, 10, 313-331.

Grossman,G. and J.D. Richardson (1985) "Strategic Trade Policy: A Survey of Issues and Early Analysis", Special Papers in International Economics, No. 15, Princeton University.

Harris, R.G. with David Cox (1984) *Trade, Industrial Policy and Canadian Manufacturing*, (Ontario Economic Council, Toronto).

Harris, R.G. (1984b) "Applied General Equilibrium Analysis of Small Open Economies with Scale Economies and Imperfect Competition", *American Economic Review*, 74, 1016-1033.

Harris, R.G. (1985) "Why Voluntary Export Restraints are 'Voluntary'", *Canadian Journal of Economics*, 18, 799-809.

Harris, R.G. (1985b) *Trade, Industrial Policy and International Competition*, Vol. 13, Research series prepared for the Royal Commission on the Economic Union and Development Prospects for Canada. (University of Toronto Press, Toronto).

Harris, R.G. (1988) "Export Promotion in the Presence of Entry Barriers", mimeo, Queen's University, Kingston.

Harris, R.G. (1989) "Market Access: A Theoretical Appraisal" in R. Stern (ed.) *U.S.-Canadian Trade and Investment Relations with Japan* (University of Chicago Press, Chicago) (forthcoming).

Helpman, E and P. Krugman (1985) *Market Structure and Foreign Trade.* (MIT Press, Cambridge).

Herberg, H. and M. Kemp (1969) "Some Implications of Variable Returns to Scale", *Canadian Journal of Economics*, 2, 403-415.

Horstmann, I. and J.R. Markusen (1986) "Up the Average Cost Curve: Inefficient Entry and the New Protectionism", *Journal of International Economics*, 20, 225-247.

Katz, L. and L.H. Summers (1988) "Can Inter-Industry Wage Differentials Justify Strategic Trade Policy", paper presented to Universities Research Conference on Trade Policies for International Competitiveness, N.B.E.R., Cambridge, Mass.

Krishna, K. (1985) "Trade Restrictions as Facilitating Practices", working paper No. 1546, National Bureau of Economic Research.

Krugman, P. (1979) "Increasing Returns, Monopolistic Competition and International Trade", *Journal of International Economics*, 9, 469-479.

Krugman, P. (1984) "Import Protection as Export Promotion", in H. Kierzkowski (ed.) *Monopolistic Competition and International Trade* (Oxford University Press, London).

Johnson, H.G. (1953/54) "Optimum Tariffs and Retaliation" *Review of Economic Studies*, 21, 142-153.

Lawrence, C. and P.T. Spiller (1983) "Product Diversity, Economies of Scale and International Trade", *Quarterly Journal of Economics*, 98, 63-83.

Markusen, J.R. (1981) "Trade and the Gains from Trade with Imperfect Competition", *Journal of International Economics*, 11, 531-551.

Markusen, J.R. and A.J. Venables (1988) "Trade Policy with Increasing Returns and Imperfect Competition: Contradictory Results for Competing Assumptions", *Journal of International Economics*, 24, 299-316.

Melvin, J.R. (1969) "Increasing Returns to Scale as a Determinant of Trade", *Canadian Journal of Economics*, 2, 389-402.

Melvin, J.R. and R.D.Warne (1973) "Monopoly and the Theory of International Trade", *Journal of International Economics*, 3, 117-134.

Rodrik, D. (1988) "Imperfect Competition, Scale Economies and Trade Policy in Developing Countries", in R.E. Baldwin (ed.) *Trade Policy Issues and Empirical Analysis* (National Bureau of Economic Research, University of Chicago Press, Chicago).

Ross, T.W. (1988) "Movements Toward Free Trade and Domestic Market Performance with Imperfect Competition", *Canadian Journal of Economics*, XXI, 507-524.

Smith, A. and A.J. Venables (1988) "Imperfect Competition, Trade Policy and the World Automobile Industry: A Simulation Study", mimeo, University of Sussex.

Spencer, B and J. A. Brander (1983) "International R&D Rivalry and Industrial Strategy", *Review of Economic Studies*, 50, 707-722.

Smiley, R. (1988) "Empirical Evidence on Strategic Entry Deterrence", *International Journal of Industrial Organization*, 6, 167-180.

Venables, A.J. (1982) "Optimal Tariffs for Trade in Monopolistically Competitive Commodities", *Journal of International Economics*, 12, 225-41.

Venables, A.J. (1985) "Trade and Trade Policy with Imperfect Competition: The Case of Identical Products and Free Entry", *Journal of International Economics*, 19, 1-19.

Venables, A.J. (1985) "International Trade, Trade and Industrial Policy and Imperfect Competition: A Survey", mimeo, University of Sussex.

Venables, A.J. (1987) "Trade and Trade Policy with Differentiated Products: A Chamberlinian-Ricardian Model", *Economic Journal*, 97, 700-717.